REMARKS

In the Office Action, the Examiner rejected claims 1-4, 51, 52, 54-58, and 60-75. Claims 1-4, 51, 52, 54-58, and 60-75 remain pending in the present application. In view of the following remarks, the Applicants respectfully request reconsideration and allowance of all pending claims.

Response to Arguments

In the "Response to Arguments" section on page 13 of the current Office Action, the Examiner responded to the Applicants' arguments about the prior art of Sato not showing any rub occurring between tip portions of blades and corresponding seal portions. The Examiner referred to FIG. 1, units 9a, 9b and S of Sato and stated that Sato apparently discloses that a rub is occurring between the tip portions of blades and corresponding seal portions of the turbomachine. The Examiner further referred to FIG. 1 of Sato and stated that the bearing is used as seal portions.

Applicants refer to FIG. 1 of Sato and respectfully point out that unit S is a rotary shaft of the rotor of a rotary machine, and units 9a and 9b are two journal bearings. The rotary shaft is journalled in 9a and 9b. Sato, col. 2, lines 47-51. Referring further to Sato, "FIG. 1 illustrates, for the purpose of explanation, that rubbing is occurring at a point R between the rotor and the stator 2 of the rotary machine 1." Sato, FIG. 1; col. 2, lines 55-58. The rub in Sato's rotary machine is, therefore, occurring between the shaft and its corresponding bearings and not between any tip portions of any blade and corresponding seal portions of the turbomachine, as is the case with the present application.

The Examiner's remarks on page 13 of the current Office Action, lines 9-12 further reinforce this distinction between Sato and the present application. The Examiner referred to FIG. 1 and stated that "Sato discloses a rub condition on the turboshaft (fig.1, unit S) with any other part of the turbo components or any metal contacts thereof (Col. 2,

Lines 5-11), including any seal or any mechanical structure that is attached to the shaft (this case is a blade)". (Emphasis added). The quoted passage from Sato is cited below:

> FIG. 9 is a graphic representation of the waveforms of output signals from the individual circuits shown in FIG. 8 to illustrate, for the sake of comparison, how the output waveforms vary depending on the occurrence of rubbing, the occurrence of abnormal metal-to-metal contact at a bearing, or simultaneous occurrence of rubbing and abnormal metal-to-metal contact. Sato, col. 2, lines 5-11 (emphasis added).

Applicants respectfully reiterate that according to the foregoing passage and the comments of the Examiner, the Examiner is apparently equating a rub occurring between the shaft and its corresponding bearings as in Sato with a rub between tip portions of the plurality of blades and corresponding seal portions of the turbomachine, as is the case with the present application. The Sato reference, however does not mention any "seal portion" and the Examiner did not identify either the tip portions of the plurality of blades or the corresponding seal portions.

Moreover, the Examiner stated that "the applicant recited some inherent features of the turbine in the claims and the Examiner has provided extrinsic evidence of inherent element of a turbine (specifically with it blade) use at the time of the invention." The Examiner continued to state that "to serve as an anticipation when the reference is silent about an asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence". Final Office Action, page 13, lines 13-18.

Applicants respectfully point out that regarding inherency limitations, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson,* 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a

certain thing may result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy,* 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.*

Applicants respectfully emphasize that in the present instance, in the absence of adequate basis in fact and/or technical reasoning to reasonably support the determination, the allegedly inherent characteristic of the rub between tip portions of the plurality of blades and corresponding seal portions does not necessarily flow from the teachings of the rub occurring between the shaft and its corresponding bearings of the applied prior art. Accordingly, the Applicants respectfully request reconsideration and allowance of all pending claims.

Rejections Under 35 U.S.C. § 102

The Examiner rejected claims 1, 3, 4, 51, 52, 54-58, and 60-75 under 35 U.S.C. § 102(b) as anticipated by Sato et al. (U.S. Patent No. 4,478,082, hereinafter "Sato"). Applicants respectfully traverse this rejection.

Legal Precedent

First, the pending claims must be given an interpretation that is reasonable and consistent with the *specification*. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); *see also In re Morris,* 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); *see also* M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is "the primary basis for construing the claims." *See Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*).

One should rely *heavily* on the written description for guidance as to the meaning of the claims. *See id.*

Second, interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. *See In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. "The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." *See Collegenet, Inc. v. ApplyYourself, Inc.*, No. 04-1202, -1222, 1251, at 8-9 (Fed. Cir. August 2, 2005) (quoting *Phillips*, No. 03-1269, -1286, at 16). The Federal Circuit has made clear that derivation of a claim term must be based on "usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art." *See id.*

Third, anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Fourth, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing

described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson,* 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy,* 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.* Regarding functional limitations, the Examiner must evaluate and consider the functional limitation, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. *See* M.P.E.P. § 2173.05(g); *In re Swinehart,* 169 U.S.P.Q. 226, 229 (C.C.P.A. 1971); *In re Schreiber,* 44 U.S.P.Q.2d 1429, 1432 (Fed. Cir. 1997). If the Examiner believes the functional limitation to be inherent in the cited reference, then the Examiner "must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art." *Ex parte Skinner,* 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Inter. 1986).

Independent claims 1, 3, 4, 51, 52, 54 and 56.

Turning to the claims, the present independent claim 1 recites, *inter alia*, "detecting whether a rub is occurring in the turbomachine between tip portions of the plurality of blades and corresponding seal portions of the turbomachine." Independent claim 3 recites, *inter alia*, "determining whether a rub is occurring between tip portions of the plurality of blades and corresponding seal portions of the turbomachine." Independent claim 4 recites, *inter alia*, "determining whether a rub is occurring between tip portions of the plurality of blades and corresponding seal portions of the turbomachine." Independent claim 51 recites, *inter alia*, "means for detecting whether a rub is occurring in the turbomachine between tip portions of the plurality of blades and

corresponding seal portions of the turbomachine." Independent claim 52 recites, *inter alia*, "a rub detection system configured to … detect a turbomachine rub event occurring between tip portions of the plurality of blades and corresponding seal portions of the turbomachine." Independent claim 54 recites, *inter alia*, "a rub detection system configured to … detect a turbomachine rub event occurring between tip portions of the plurality of blades and corresponding seal portions of the turbomachine." Independent claim 56 recites, *inter alia*, "analyzing turbomachine operational data to detect a rub event in the turbomachine … wherein the rub event occurs between tip portions of the plurality of blades and corresponding seal portions of the turbomachine."

Sato does not teach or suggest that a rub is occurring in the turbomachine between tip portions of blades and corresponding seal portions of the turbomachine, as is generally recited by independent claims 1, 3, 4, 51, 52, 54 and 56. The Examiner referred to FIG. 1, units 9a, 9b and S of Sato and stated that Sato apparently discloses that a rub is occurring between the tip portions of blades and corresponding seal portions of the turbomachine. The Examiner further referred to FIG. 1 of Sato and stated that the bearing is used as seal portions.

As explained in the "Response to Arguments" section above, the Applicants respectfully reiterate that the Examiner has apparently equated a rub occurring between the shaft and its corresponding bearings of the Sato reference with a rub between tip portions of the plurality of blades and corresponding seal portions of the turbomachine, as generally recited by the present claims. The Sato reference, however, does not mention any "seal portion" and the Examiner did not identify either the tip portions of the plurality of blades or the corresponding seal portions. The Applicants, therefore, respectfully stress that Sato does not teach or suggest that rubbing is occurring between *tip portions* of blades and *corresponding seal portions* of the turbomachine, as generally recited by claims 1, 3, 4, 51, 52, 54 and 56. In view of these deficiencies, among others, the cited

reference cannot anticipate independent claims 1, 3, 4, 51, 52, 54 and 56 and their dependent claims.

Dependent claims 62, 66, 68, 70, 72 and 74.

Dependent claims 62, 66, 68, 70, 72 and 74 recite a variety of features that are missing from Sato. Each of these dependent claims recites, *inter alia*, "plurality of blades is disposed on the rotor and the corresponding seal portions are disposed on the stator."

Sato fails to teach or suggest the foregoing feature of the plurality of blades disposed on the rotor and the corresponding seal portions disposed on the stator as recited in dependent claims 62, 66, 68, 70, 72 and 74. In sharp contrast, Sato discloses a rub occurring only between a shaft and its corresponding bearings as discussed in detail above in relation to the argument on the 35 U.S.C. § 102(b) rejection of claims 1, 3, 4, 51, 52, 54 and 56. Applicants have carefully reviewed the sections (*e.g.*, Col. 2, line 50 and FIG. 1, units 9a, 9b and S) referenced by the Examiner and submit that these sections fail to disclose any plurality of blades being disposed on the rotor and the corresponding seal portions being disposed on the stator as recited in dependent claims 62, 66, 68, 70, 72 and 74. In view of the foregoing deficiencies in the teachings of the prior art, the reference cannot establish a *prima facie* case of anticipation of claims 62, 66, 68, 70, 72, and 74. Accordingly, these claims are believed to be clearly patentable over the cited reference. Their reconsideration and allowance are respectfully requested.

For at least these reasons, among others, the Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claim 2 under 35 U.S.C. §103(a) as being unpatentable over Sato in view of a Turbine Power Systems Conference (February 25-26, 2002). Applicants respectfully traverse this rejection.

As stated above, independent claim 1 recites detecting whether a rub is occurring in the turbomachine between tip portions of the plurality of blades and corresponding seal portions of the turbomachine. Sato fails to teach or suggest the foregoing features of independent claims 1 as discussed in detail above.

The secondary reference, as set forth in the 35 U.S.C. § 103(a) rejections above, does not obviate this deficiency of the Sato reference. The "Turbine power systems conference" reference fails to obviate the deficiencies of the Sato reference. The Examiner relied on the secondary reference solely for its disclosure of a server in communication with the on site monitor via an internet. However, the secondary reference does not teach or suggest detecting whether a rub is occurring in the turbomachine between tip portions of the plurality of blades and corresponding seal portions of the turbomachine. For at least this reason, among others, the hypothetical combination of the Sato reference and the "Turbine power systems conference" reference cannot support a *prima facie* case of obviousness of claim 2 or the other pending claims.

For at least these reasons, among others, the Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 103.

Conclusion

The Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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